

Amendments to the Claims:

This listing of claims will replace all prior versions and listing of claims in the application.

Listing of Claims:

1-31. (Canceled)

32. (Currently Amended) A storage system, comprising:

a ~~first storage~~virtualization device coupled to an information processing device and having a first controller and ~~a plurality of first disk drives~~at least one virtual volume;

said first controller ~~controlling to store~~receiving a data input request received, which has a first Logical Unit Number (LUN) and data and is sent from said information processing device to said virtual volume, ~~in said first disk drives~~ and changing said first LUN included in said data input request into a second LUN of at least one first logical volume in a first storage device based on a relationship between said virtual volume and said first logical volume and relaying said changed data input request to said first logical volume ~~receiving a first command and being able to transfer said first command to a Nth (N = positive integer of no fewer than 3) storage device without transferring said first command to a second storage device,~~ said first command being sent from said information processing device to said Nth storage device;

said ~~second~~ first storage device being coupled to said first storage ~~virtualization~~ device and being nearer to said first storage device than said Nth storage device and having a second controller and a plurality of ~~second~~ first disk drives;

said second controller ~~controlling to store~~ receiving said changed data input request from said virtualization device and storing said data of said changed data input request in said ~~second~~ first disk drives related to said first logical volume, and being able to receive said first command from said first storage device and being able to transfer said first command to said Nth storage device;

said Nth ~~a second~~ storage device being coupled to said ~~second~~ storage device or a (N-1)th storage device and having a Nth third controller and a plurality of Nth second disk drives; and

said Nth third controller ~~controlling to store~~ storing data in said Nth second disk drives related to a second logical volume and ~~receiving said first command from said first storage device and executing said first command~~;

wherein said first controller receives a command, in which said first LUN and command information is sent from said information processing device to said virtual volume, and changes said first LUN included in said command into said second LUN based on said relationship and relays said changed command to said first logical volume,

wherein said second controller receives said changed command from said

virtualization device, and

wherein said second controller and/or said third controller changes a pair status between said first logical volume and said second logical volume based on said changed command.

33. (Currently Amended) AThe storage system according to claim 32, wherein:

~~said first storage~~virtualization device ~~or said second storage device or said (N-1)th storage device is coupled to~~ has information of at least one ~~or more~~ storage devices coupled to said virtualization device.

34. (Currently Amended) AThe storage system according to claim 32, wherein:

~~said first storage~~virtualization device ~~is coupled to~~ has information of at least one ~~or more~~ storage devices coupled to said virtualization device; and

~~said first storage~~virtualization device ~~transfer~~transferring said changed data input request and said first-changed command to said ~~Nth~~first storage device based on said information.

35-37. Canceled

38. (Currently Amended) ~~A~~The storage system according to claim 32,
wherein:

~~said first command is used to request a change of relationship between a first
logical volume in a Nth storage device and a second logical volume;~~

said changed command ~~change of relationship between said first logical
volume and said second logical volume~~ is used to a change said pair status from a
first status ~~condition~~ to a second status ~~condition~~;

said first status ~~condition~~ is that said first logical volume ~~does not correspond
to~~ and said second logical volume do not form a pair in which one of said first logical
volume and said second logical volume is set as a primary volume and another is set
as a secondary volume; and

said second status ~~condition~~ is that said first logical volume ~~corresponds to~~ and
said second logical volume form said pair.

39. (Currently Amended) ~~A~~The storage system according to claim 32,
wherein:

~~said first command is used to request a change of relationship between a first
logical volume in a Nth storage device and a second logical volume; and~~

said change of said pair status ~~relationship between said first logical volume
and said second logical volume~~ is to form a pair of said first logical volume as being a
primary volume and said second logical volume as being a secondary volume storing

data that ~~corresponds~~ which are corresponding to data stored in said primary volume.

40. (Currently Amended) A The storage system according to claim 32, wherein:

~~said first command is used to request a change of relationship between a first logical volume in a Nth storage device and a second logical volume; and~~

said change of said pair status ~~relationship between said first logical volume and said second logical volume~~ is to form a pair of said second logical volume as being a primary volume and said first logical volume as being a secondary volume storing data that ~~corresponds~~ which are corresponding to data stored in said primary volume.

41. (Currently Amended) A The storage system according to claim 32, wherein:

~~said first command is used to request a change of relationship between a first logical volume in a Nth storage device and a second logical volume; and~~

said changed command ~~change of relationship between said first logical volume and said second logical volume~~ is used to change said pair status to a status state of copying data stored in said first logical volume as a primary volume to said

second logical volume as a secondary volume so that data stored in said first logical volume conforms to data stored in said second logical volume.

42. (Currently Amended) A The storage system according to claim 32, wherein:

~~said first command is used to request a change of relationship between a first logical volume in a Nth storage device and a second logical volume; and~~

said changed command ~~change of relationship between said first logical volume and said second logical volume~~ is used to change said pair status to a status state of copying data stored in said second logical volume as a primary volume to said first logical volume as a secondary volume so that data stored in said second logical volume conforms to data stored in said first logical volume.

43. (Currently Amended) A The storage system according to claim 32, wherein:

~~said first command is used to request a change of relationship between a first logical volume in a Nth storage device and a second logical volume; and~~

said changed command ~~change of relationship between said first logical volume and said second logical volume~~ is used to change said pair status to a status state of ~~storing~~ copying data in ~~relation to~~ needed to be stored in said first logical

volume as a primary volume into said second logical volume as a secondary volume,
if said second controller receives said changed data input request.

44. (Currently Amended) AThe storage system according to claim 32,
wherein:

~~said first command is used to request a change of relationship between a first
logical volume in a Nth storage device and a second logical volume; and~~

said changed command ~~change of relationship between said first logical volume
and said second logical volume~~ is used to change said pair status to a status state of
storing data in relation to said second logical volume as a primary volume in said first
logical volume as a secondary volume, if said third controller receives another data
input request.

45. (Currently Amended) AThe storage system according to claim 32,
wherein:

~~said first command is used to request a change of relationship between a first
logical volume in a Nth storage device and a second logical volume; and~~

said changed command ~~change of relationship between said first logical volume
and said second logical volume~~ is used to change said pair status to a status state of
storing data sent from said information processing device in said first logical volume

as a primary volume and not to store data in relation to said first logical volume in said second logical volume as a secondary volume.

46. (Currently Amended) A The storage system according to claim 32, wherein:

~~said first command is used to request a change of relationship between a first logical volume in a Nth storage device and a second logical volume; and~~

said changed command ~~change of relationship between said first logical volume and said second logical volume~~ is used to change said pair status to a status state of storing data sent from said information processing device in said second logical volume as a primary volume and not to store data in relation to said second logical volume in said first logical volume as a secondary volume.

47. (Currently Amended) A The storage system according to claim 32, wherein:

~~said first command is used to request a change of relationship between a first logical volume in a Nth storage device and a second logical volume; and~~

said changed command ~~change of relationship between said first logical volume and said second logical volume~~ is used to change said pair status to a status state of restoring data from said first logical volume as a primary volume to said second logical volume as a secondary volume.

48. (Currently Amended) ~~A~~The storage system according to claim 32,
wherein:

~~said first command is used to request a change of relationship between a first
logical volume in a Nth storage device and a second logical volume; and~~

~~said changed command change of relationship between said first logical volume
and said second logical volume is used to change said pair status to a status state of
copying/restoring data in relation to said first logical volume in said second logical
volume.~~

49. (Canceled)

50. (Currently Amended) ~~A~~The storage system according to claim 32,
wherein:

~~said first controller/storage device provides has a third logical volume to said
information processing device, said third logical volume being used to control said
first storage device by said information processing device to control said first storage
device; and~~

~~said first controller transfers said first command to said second storage device
based on contents of said first command sent from said information processing
device to said third logical volume.~~

51-52. (Canceled)

53. (Currently Amended) A The storage system according to claim 32,
wherein:

said first controller receives a ~~second~~ another command, which has said first LUN and command information and is sent from said information processing device to said virtual volume, ~~said second command being used to request a condition of a first logical volume from said information processing device to said Nth storage device, and~~ changes said first LUN included in said another command into said second LUN based on said relationship and ~~can transfers~~ said changed another ~~second command to said Nth~~ first storage device ~~without transferring said second command to said second storage device; and~~

said ~~Nth~~ first controller receives said changed another ~~second~~ command from ~~said first storage device or said (N-1)th storage~~ virtualization device and ~~replies with a said pair status of said first logical volume to said information processing device via said first storage~~ to said virtualization device ~~or said (N-1)th storage device in response to said~~ changed another ~~second~~ command.

54. (Currently Amended) A storage system, comprising:

a ~~first storage~~virtualization device coupled to an information processing device and having a first controller and a ~~plurality of first disk drives~~at least one virtual volume;

said first controller ~~controlling to store~~receiving a data input request sent from said information processing device to said virtual volume in said first disk drivesand changing a first Logical Unit Number (LUN) included in said data input request into a second LUN of at least one first logical volume in a first storage device based on a relationship between said virtual volume and said first logical volume and relaying a data input request including said second LUN to said first logical volumeand ~~receiving a first command and being able to transfer said first command to a third storage device without transferring said first command to a second storage device, said first command being sent from said information processing device to said third storage device;~~

said ~~second~~first storage device being coupled to said first storagevirtualization device and being ~~nearer said first storage device than to said third storage device~~ and having a second controller and a plurality of ~~second~~first disk drives;

said second controller ~~controlling to store~~receiving said data input request including said second LUN from said virtualization device and storing data of said data input request including said second LUN in said ~~second~~first disk drives related to said first logical volumeand ~~being able to receive said first command from said first~~

~~storage device and being able to transfer said first command to said third storage device;~~

~~said third~~ a second storage device being coupled to ~~said second storage device and~~ having a third controller and a plurality of ~~third~~ second disk drives; and

~~said third controller controlling to store~~ storing data in said ~~third~~ second disk drives related to a second logical volume, ~~and receiving said first command from said first storage device and executing said first command;~~

wherein said first controller receives a command sent from said information processing device to said virtual volume and changes said first LUN included in said command into said second LUN based on said relationship and relays a command including said second LUN to said first logical volume, said command including said second LUN is used to inquire a pair status between said first logical volume and said second logical volume,

wherein said second controller receives said command including said second LUN from said virtualization device and replies said pair status to said virtualization device in response to said command including said second LUN.

55-75. (Canceled)

76. (New) The storage system according to claim 32, wherein:

said first controller has a map of said relationship in a memory and reads said map in said memory on receiving said data input request and said command.

77. (New) The storage system according to claim 32, wherein:

said first and second LUN are based on Small Computer System Interface (SCSI) standards.

78. (New) A storage system, comprising:

a virtualization device coupled to an information processing device and having a first controller and at least one virtual volume;

said first controller receiving a data input request, which has a first Logical Unit Number (LUN) and data and is sent from said information processing device to said virtual volume, and changing said first LUN included in said data input request into a second LUN of at least one first logical volume in a first storage device based on a relationship between said virtual volume and said first logical volume and relaying said changed data input request to said first logical volume;

said first storage device coupled to said virtualization device and having a second controller and a plurality of first disk drives;

said second controller receiving said changed data input request from said virtualization device and storing said data of said changed data input request in said first disk drives related to said first logical volume;

said second storage device coupled to said first storage device and having a third controller and a plurality of second disk drives; and

said third controller storing data in said second disk drives related to a second logical volume and a third logical volume,

wherein said first controller receives a command, which has said first LUN and command information and is sent from said information processing device to said virtual volume, and changes said first LUN included in said command into said second LUN based on said relationship and relays said changed command to said first logical volume,

wherein said second controller receives said changed command from said virtualization device and transfers said changed command to a second storage device, and

wherein said third controller receives said changed command from said first storage device and changes a pair status between said second logical volume and said third logical volume based on said changed command.

79. (New) A storage system, comprising:

a virtualization device coupled to an information processing device and having a first controller and at least one virtual volume;

said first controller receiving a data input request sent from said information processing device to said virtual volume and changing a first Logical Unit Number

(LUN) included in said data input request into a second LUN of at least one first logical volume in a first storage device based on a relationship between said virtual volume and said first logical volume and relaying a data input request including said second LUN to said first logical volume;

said first storage device coupled to said virtualization device and having a second controller and a plurality of first disk drives;

said second controller receiving said data input request including said second LUN from said virtualization device and storing data of said data input request including said second LUN in said first disk drives related to said first logical volume;

a second storage device coupled to said first storage device and having a third controller and a plurality of second disk drives; and

said third controller storing data in said second disk drives related to a second logical volume and a third logical volume,

wherein said first controller receives a command sent from said information processing device to said virtual volume and changes said first LUN included in said command into said second LUN based on said relationship and relays a command including said second LUN to said first logical volume, said command including said second LUN is used to inquire a pair status between said second logical volume and said third logical volume,

wherein said second controller receives said command including said second LUN from said virtualization device and changes said second LUN included in said

command into a third LUN and transfers a command including said third LUN to a second storage device, and

wherein said third controller receives said command including said third LUN from said first storage device and replies said pair status to said first storage device in response to said command including said third LUN.

80. (New) A storage system, comprising:

a virtualization device coupled to an information processing device and having a first controller and at least one virtual volume;

said first controller receiving a data input request sent from said information processing device to said virtual volume and changing a first Logical Unit Number (LUN) included in said data input request into a second LUN of at least one first logical volume in a first storage device based on a relationship between said virtual volume and said first logical volume and relaying a data input request including said second LUN to said first logical volume;

said first storage device coupled to said virtualization device and having a second controller and a plurality of first disk drives related to said first logical volume;

said second controller receiving said data input request including said second LUN from said virtualization device and storing data of said data input request including said second LUN in said first disk drives;

a second storage device having a third controller and a plurality of second

disk drives related to a second logical volume; and

said third controller storing data in said second disk drives,

wherein said first controller receives a command sent from said information processing device and relaying said command to said first storage device,

wherein said second controller receives said command from said virtualization device, and

wherein said second controller and/or said third controller changes a pair status between said first logical volume and said second logical volume based on said command.

81. (New) The storage system according to claim 80, wherein:

said first controller has a map of said relationship in a memory and reads said map in said memory on receiving said data input request.

82. (New) The storage system according to claim 80, wherein:

said first and second LUN are based on Small Computer System Interface (SCSI) standards.

83. (New) The storage system according to claim 80, wherein:

said command is used to change said pair status from a first status to a second status;

said first status is that said first logical volume and said second logical volume do not form a pair in which one of said first logical volume and said second logical volume is set as a primary volume and another is set as a secondary volume; and

said second status is that said first logical volume and said second logical volume form said pair.

84. (New) The storage system according to claim 80, wherein:

said command is used to change said pair status to a status of copying data stored in said first logical volume as a primary volume to said second logical volume as a secondary volume so that data stored in said first logical volume conform to data stored in said second logical volume.

85. (New) The storage system according to claim 80, wherein:

said command is used to change said pair status to a status of copying data needed to be stored in said first logical volume as a primary volume to said second logical volume as a secondary volume, if said second controller receives said changed data input request.

86. (New) The storage system according to claim 80, wherein:

said command is used to change said pair status to a status of storing data sent from said information processing device in said first logical volume as a primary

volume and not to store data in relation to said first logical volume in said second logical volume as a secondary volume.

87. (New) The storage system according to claim 80, wherein:

said command is used to change said pair status to a status of restoring data from said first logical volume as a primary volume to said second logical volume as a secondary volume.

88. (New) A storage system, comprising:

a virtualization device coupled to an information processing device and having a first controller and at least one virtual volume;

said first controller receiving a data input request, which has a first Logical Unit Number (LUN) and data and is sent from said information processing device to said virtual volume, and changing said first LUN included in said data input request into a second LUN of at least one first logical volume in a first storage device based on a relationship between said virtual volume and said first logical volume and relaying said changed data input request to said first logical volume;

said first storage device coupled to said virtualization device and having a second controller and a plurality of first disk drives related to said first logical volume;

said second controller receiving said changed data input request from said virtualization device and storing said data of said changed data input request in said first disk drives;

a second storage device having a third controller and a plurality of second disk drives related to a second logical volume; and

said third controller storing data in said second disk drives;

wherein said first controller receives a command sent from said information processing device and relaying said command to said first storage device, said command is used to inquire a pair status between said first logical volume and said second logical volume, and

wherein said second controller receives said command from said virtualization device and replies said pair status to said virtualization device in response to said command.